DOCUMENT RESUME

ED 079 426 TM 003 030

TITLE 1972-73 Illinois Statewide High School Testing Program School Norms.

INSTITUTION Illinois Univ., Urbana. Center for Instructional Research and Curriculum Evaluation.

NOTE 16p.

EDRS PRICE MF-$0.65 HC-$3.29

DESCRIPTORS *Academic Achievement; Achievement Tests; Aptitude Tests; *Comparative Analysis; High Schools; High School Students; *Norms; Private Schools; State Programs; *Student Ability; *Test Results

IDENTIFIERS Illinois

ABSTRACT

Norm graphs are given for the purpose of aiding in the comparison of students of one school with those of another school with regard to scholastic ability, achievement, and school size. (CK)

ED 079426

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TM 003 030

# 1972-73 ILLINOIS STATEWIDE HIGH SCHOOL TESTING PROGRAM

## SCHOOL NORMS

The norm graphs enclosed herewith are intended to help you answer questions such as the following:

1. How do our students compare with students in other schools in the state in regard to their scholastic ability and to their achievement?

2. How do our students compare in scholastic ability and achievement in the basic skills with students in other schools of similar size?

3. How does the level of achievement in the basic skills for our students compare with students of approximately equal academic ability?

4. How does our school, if it is a private school, compare with respect to academic ability and achievement with other private schools in the Program?

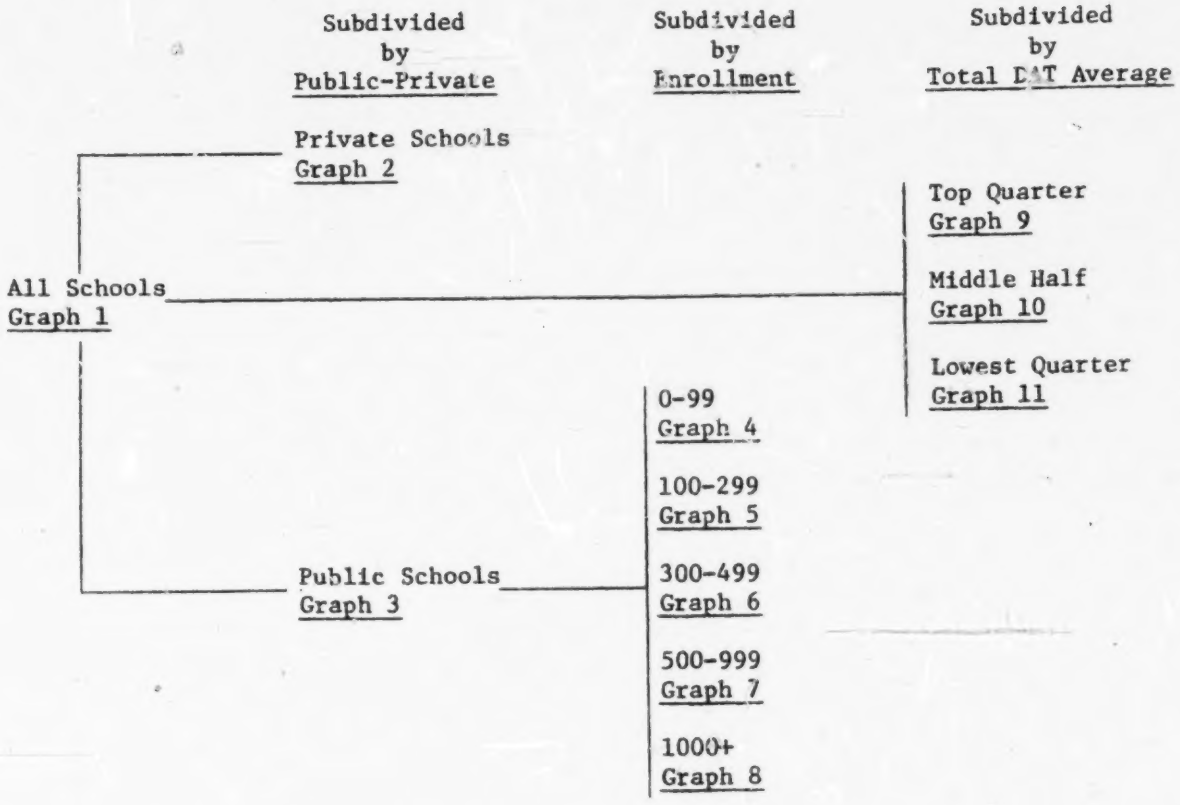
### The Organization of the Norm Data

The mean percentile was computed on each test for every junior or senior class. This mean percentile is the percentile which corresponds to the mean raw score. The mean raw score is an arithmetic average--that is, the total of the raw scores divided by the number of scores. The norm data following are based on these average percentiles. Norms were prepared as a series of twelve graphs, copies of which are attached.

The results for seniors are tabulated only in one way--all schools testing seniors (Graph 12). Further tabulations for the seniors were not practicable because the groups would have been too small to be representative. In the senior norms we used only those schools which tested ten or more seniors. This limitation excludes those schools which "picked up" only a very few seniors for special testing. Such schools obviously would not be representative and therefore not a reliable basis for norms.

The results for the junior class were tabulated as a group (Graph 1) and also by subgroups as follows:

JUNIORS




How Do I Find the Norm Scores for My School?

All schools will find it possible and to their advantage to make several norm comparisons of their results. Schools may compare their results with the norms (1) for all schools, (2) for public or private schools, (3) for schools with students of similar average academic ability, and (4) with schools of comparable size (only public schools testing juniors). For instance, suppose your juniors received a mean percentile score of 50 on the Problem Solving scores of the Mathematics Test. In Graph 1 the Problem Solving norms are given by the vertical box and line at the right-hand side of the graph. Because 50 falls in the lower half of the vertical box, we can say that the percentile mean for your school exceeds more than 25 percent (but not as many as 50 percent) of the percentile mean scores of all the schools tested. Referring to Graph 3 for juniors from the public schools only, we find that a mean of 50 falls in the lower half of the vertical box. Your juniors' average is higher than 25 percent of the junior averages in other Illinois public schools in the Program.

Now suppose that your school's D.A.T. Verbal Reasoning score were in the lowest quarter for all schools. Then Graph 11 would be used to determine the achievement of these students relative to that of others of comparable learning ability. We

find that 50 on Problem Solving falls near the top of the vertical box. Your juniors are scoring better than almost 75 percent of the junior classes of comparable learning ability.

Lastly, suppose that the total enrollment of your school is between 300 and 499. We find in Graph 6 that 50 falls at the first quartile point. This would mean that, compared with schools of its size, your school mean exceeded more than 25 percent of the mean percentile scores of such schools.

How Do I Compare Test Results within my School?

Now that you have the school norms, it may be well worth your time to read over Chapter VI of the Aids to Interpretation, which was sent to you earlier. This chapter deals with the analysis of group results.

The nine Program test scores can be divided roughly into one measure of learning ability (D.A.T. Verbal Reasoning) and eight measures of basic skills achievement (Natural Sciences, Social Studies, three communication skills scores, and three mathematics skills scores). As pointed out in Aids to Interpretation (page 16), comparisons between and within these types of scores are useful when studying individual profiles. They are also useful for studying the mean scores of your school.

Quite high or quite low differences between the Natural Sciences or Social Studies test scores in relation to the D.A.T. scores are frequently indicative of the relative strength of the programs in these two areas. For example, a lack of training in elementary and general science seems to lower the Natural Sciences test score. Thus, these reading-comprehension scores must be thought of as related to both reading and subject-matter competence.

Differences between Grammar and Usage scores in the English Test can raise questions about the curriculum in communication-skills training. For a clearer explanation of what these scores mean, see Aids to Interpretation (pages 4 and 5). Differences between Problem Solving and Mathematics Reasoning scores in the Mathematics Test can raise questions about the curriculum in mathematics. For a clearer explanation of what these scores mean, see Aids to Interpretation (pages 5 and 6).

How Good Are Our Results?

The terms "good" and "bad" connote a value judgment that norms can never make. In themselves, these norms are descriptive only of the average achievement of schools in the Program and not of what is a satisfactory standard. Indeed, judging from the comment of the critics of today's schools, academic achievement is falling far short of any "satisfactory standards." Since there is always room to improve, in one sense the levels set by norms are always "unsatisfactory." On the other hand, norms do indicate the levels of achievement which actually are being attained by other schools and, other things being equal, do represent realistic and obtainable levels of achievement. Schools probably will want to take this fact into account in setting their own standards.

But suppose, for example, that the mean for your school falls in the lower middle quarter on the Natural Sciences Test. This fact alone does not mean that you must or should put more emphasis on these particular skills. First, you need to look at other facts, such as how your pupils compare with other schools on the D.A.T. Verbal Reasoning score. Obviously, the low Natural Sciences scores will mean something different if your pupils are comparatively low on the D.A.T. Verbal Reasoning than it will if they are quite high on that test.

You should also examine the skills tested by the Natural Sciences Test and ask whether or not more emphasis on them is appropriate and where it would fit your curriculum. The basic skills represented in these tests are not "taught" by one content area alone--i.e., reading or communication skills such as these probably are not well learned if taught only in English classes. These skills are general ones in which nearly all subject-matter areas are interested. It may well be true that efforts to correct weaknesses can only be undertaken at the expense of certain other objectives. Each school must decide how high it shall set its sights and what shall be emphasized. Remember, however, not all schools can stand above average on all distributions!

## How Do I Know What Performance Levels on These Tests Are Satisfactory for My School?

You can best determine what constitutes a satisfactory level of performance by actually looking at the tests themselves. The specimen sets sent with the Manual of Instructions were to be retained by you. If these are not now available, we will send others upon request. Since we have reported both the raw scores and the percentile scores this year, you know the number of correct answers the student must have marked in order to receive a particular percentile. The mean raw score gives you an indication of the average number of correct answers marked by the students in your school. By looking at the test questions and noting the number of questions the student must have answered correctly in order to get the average percentile rank of your school, you can estimate the kind of performance this must represent.

## Distributing the Results to Your Faculty

On page 6 is a record sheet which suggests one way of presenting the profile results for your school. Many schools have found it convenient to complete this form and make duplicate copies of it for distribution to those interested. If these data are to form the basis for decision about your curriculum, you may want to give the results wide distribution among your faculty. You can quickly fill in the charts by making an "X" in the appropriate box in each column. For example, suppose that the mean for your juniors on Verbal Reasoning is 52. From Graph 1 you find that 52 falls in the upper middle quarter. Therefore, you would make an "X" in the Upper Middle box of the VR column in the top chart on page 6.

* * * * * * * * * * *

From year to year a number of schools have asked if other schools have tested all juniors. This is a good question since the comparison value of these norms would be distinctly different if any considerable number of schools tested some selected sample, e.g., college curriculum only, bottom-half students, only students who want the tests. Our answer to this question over the years has been that by our observations of school size and number of juniors tested we are convinced that virtually all schools test all of their juniors. Each year we have known of one or two which did not test all of the juniors, and we have pulled these from our norm data. This year we again asked each school explicitly whether or not it tested all juniors. It turned out that only six schools did not test all juniors, and we did not include these schools in our school norms. In other words, when you use these norms to compare your school with a school of like size, you are not comparing your students with some select group from schools of that size.

How do we compare with all the other schools in the state?

| | Learning Ability | Achievement in certain basic skills | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | English | | | Reading | | Mathematics | | |
| | VR | Gram | Usage | Total | NS | SS | Prob Solv | Reas | Total |
| Top Quarter | | | | | | | | | |
| Upper Middle | | | | | | | | | |
| Middle Half | | | | | | | | | |
| Lower Middle | | | | | | | | | |
| Lowest Quarter | | | | | | | | | |

How do we compare with other schools of our size?

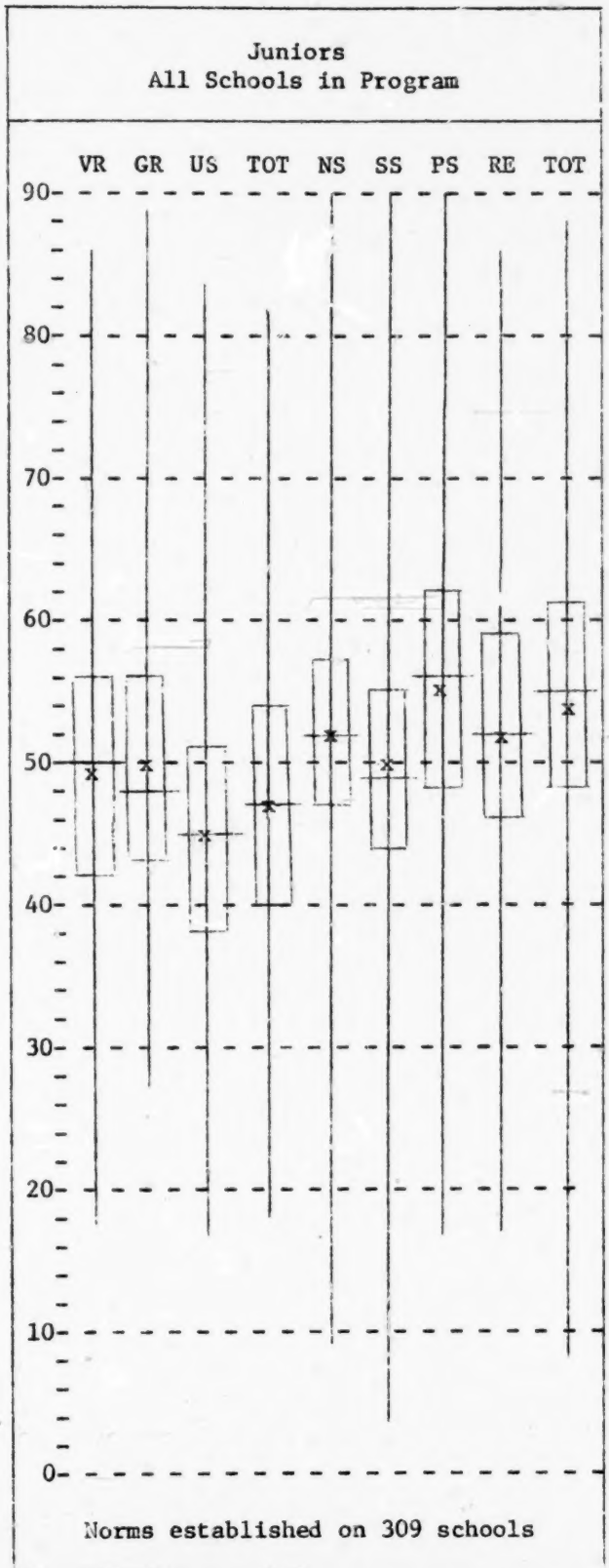
| | Learning Ability | Achievement in certain basic skills | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | English | | | Reading | | Mathematics | | |
| | VR | Gram | Usage | Total | NS | SS | Prob Solv | Reas | Total |
| Top Quarter | | | | | | | | | |
| Upper Middle | | | | | | | | | |
| Middle Half | | | | | | | | | |
| Lower Middle | | | | | | | | | |
| Lowest Quarter | | | | | | | | | |

How do we compare with other schools who have students with the same general range of learning ability in terms of achievement in the basic skills?

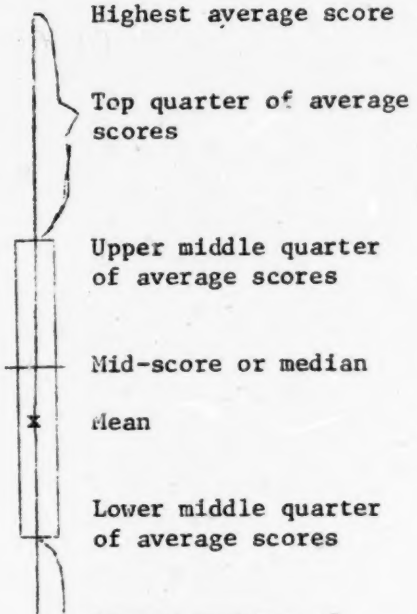
| | English | | | Reading | | Mathematics | | |
|---|---|---|---|---|---|---|---|---|
| | Gram | Usage | Total | NS | SS | Prob Solv | Reas | Total |
| Top Quarter | | | | | | | | |
| Upper Middle | | | | | | | | |
| Middle Half | | | | | | | | |
| Lower Middle | | | | | | | | |
| Lowest Quarter | | | | | | | | |

NORM GRAPHS FOR SCHOOL AVERAGES
1972-73 ILLINOIS STATEWIDE HIGH SCHOOL TESTING PROGRAM

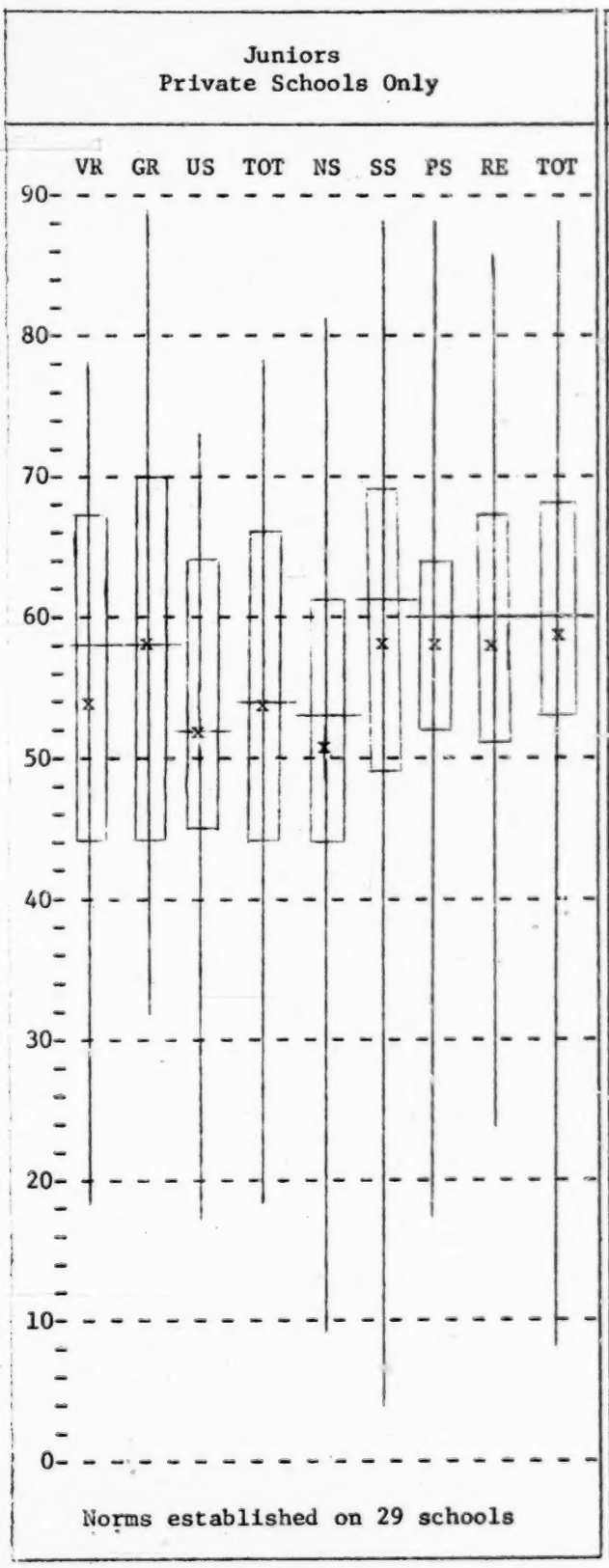
GRAPH 1



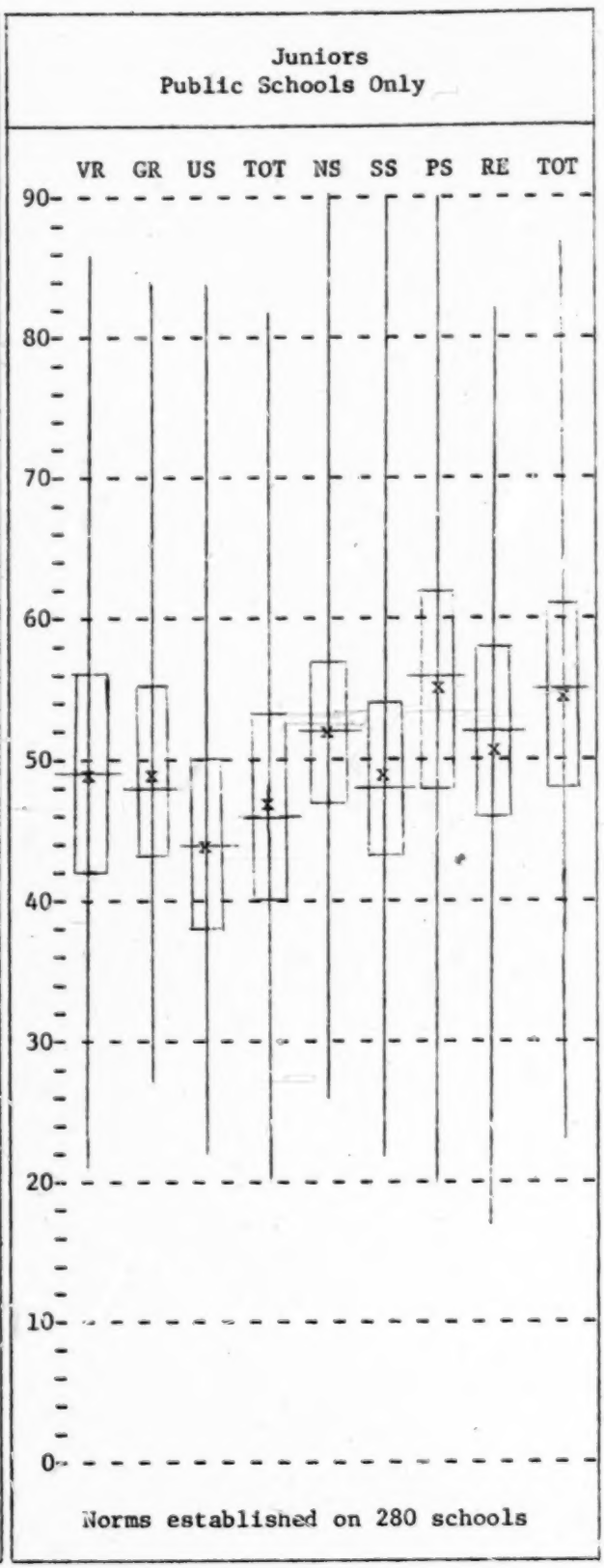

How to Interpret
Each Bar in the Graphs


Highest average score
Top quarter of average scores
Upper middle quarter of average scores
Mid-score or median
Mean
Lower middle quarter of average scores
Lowest quarter of average scores
Lowest average score

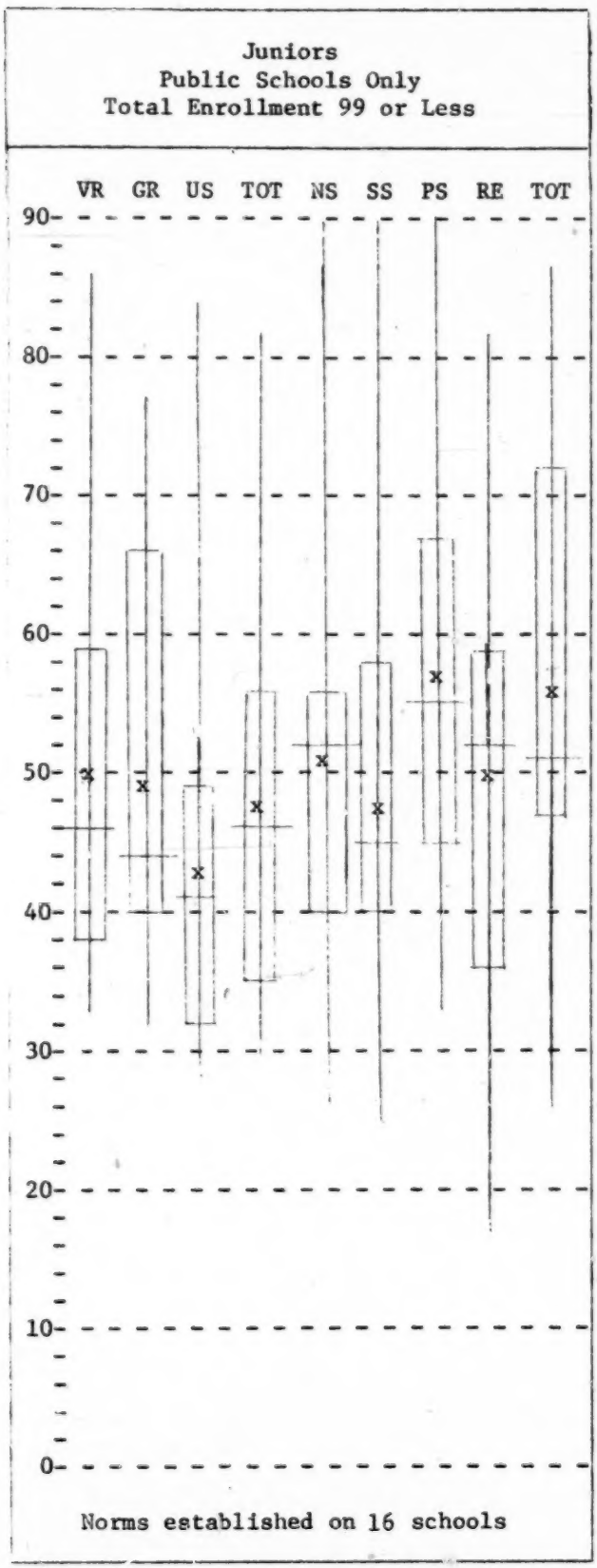
GRAPH 2



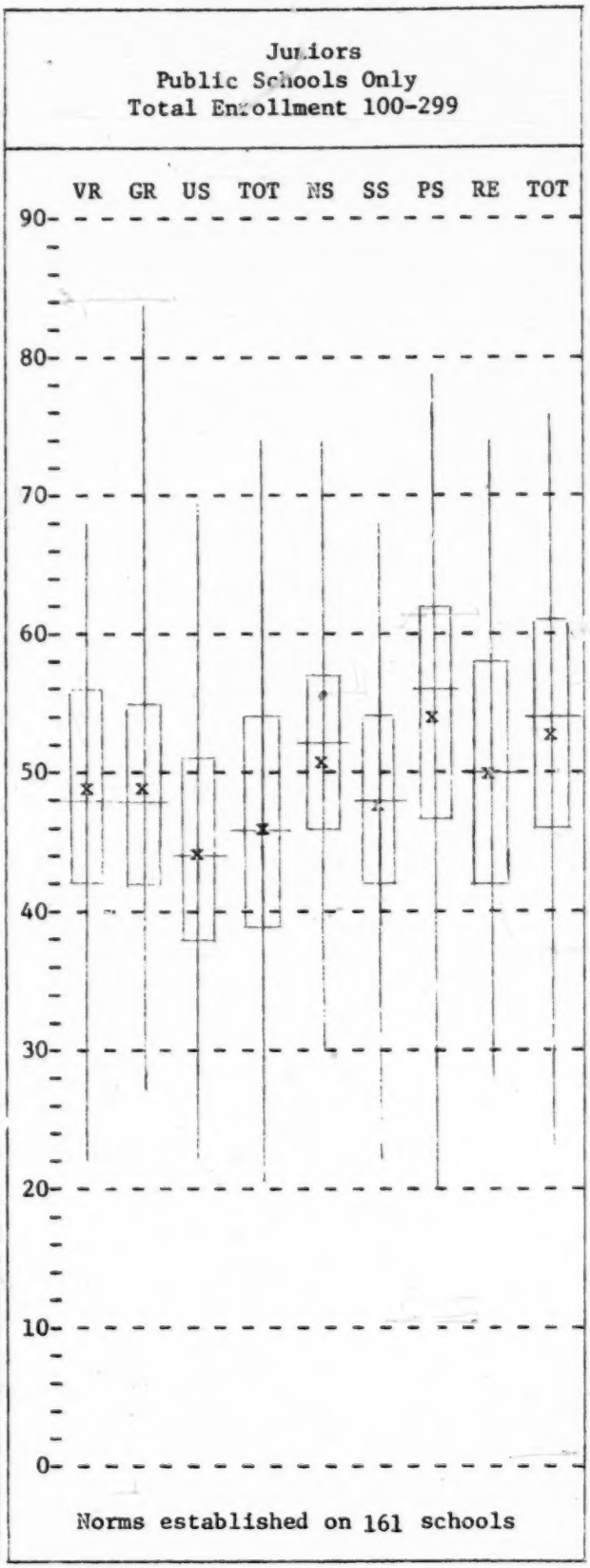

GRAPH 3



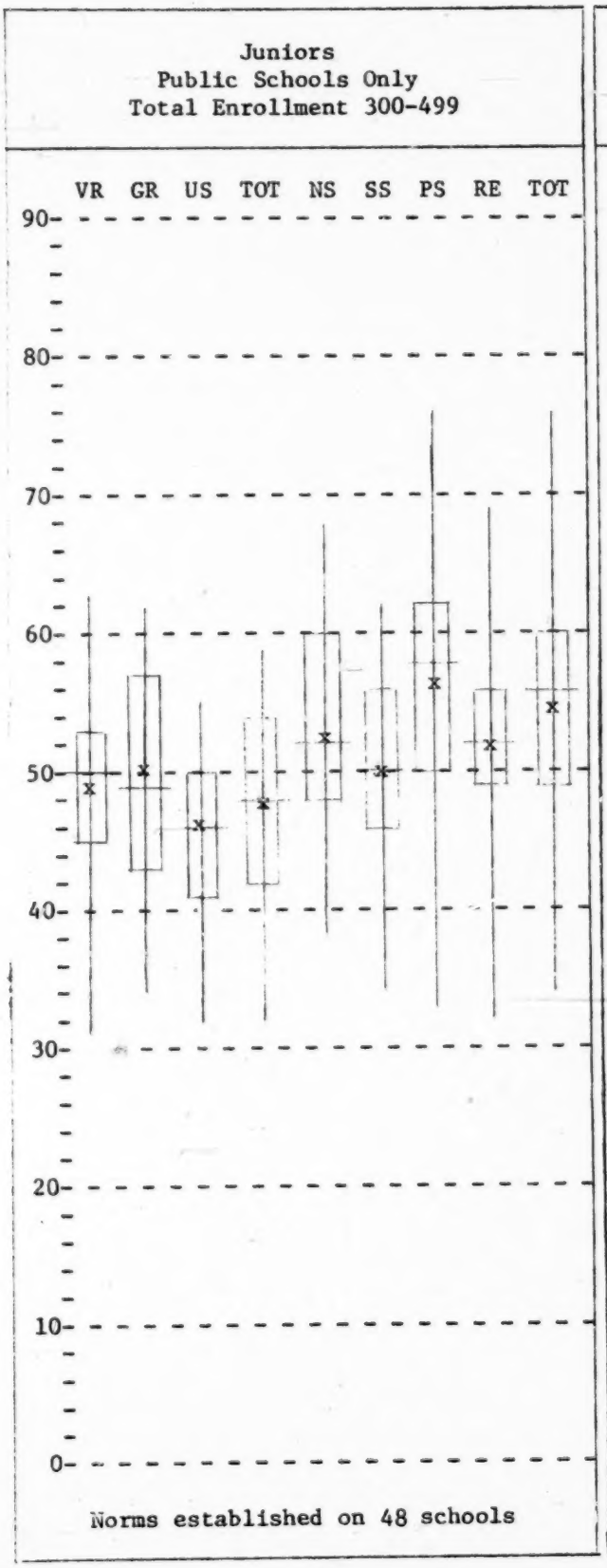
GRAPH 4



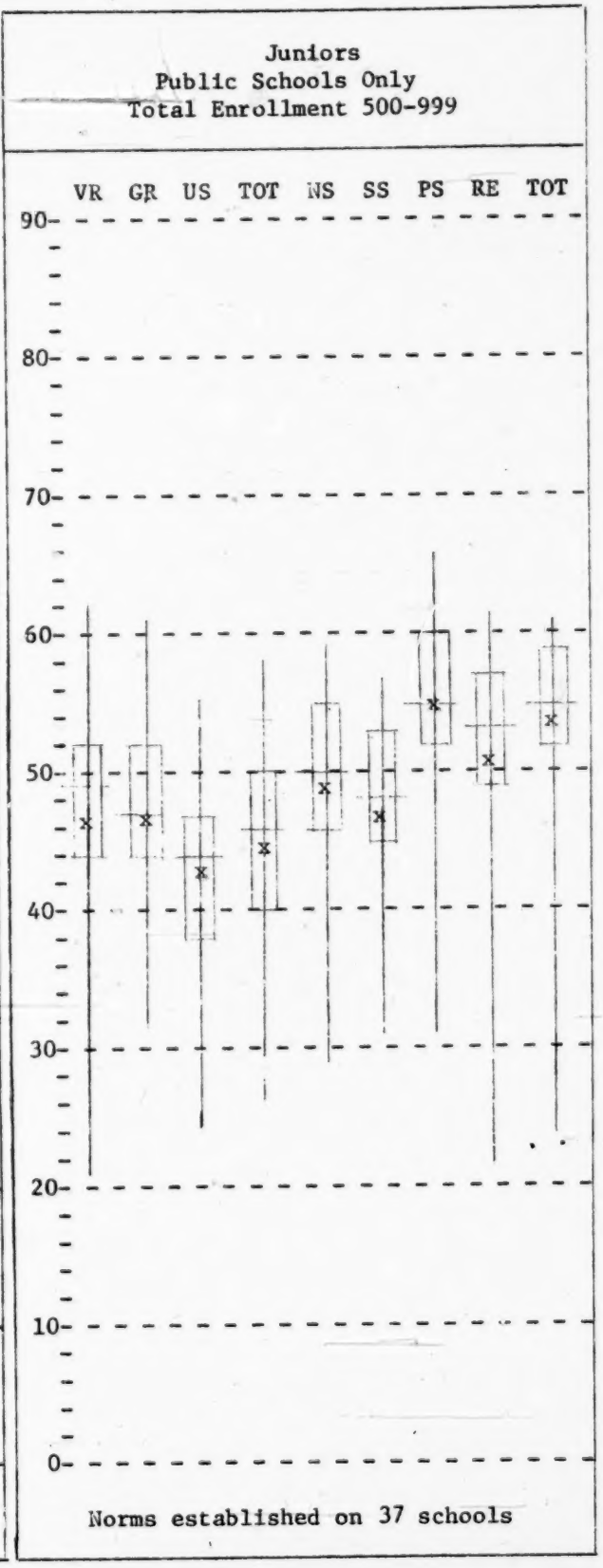

GRAPH 5



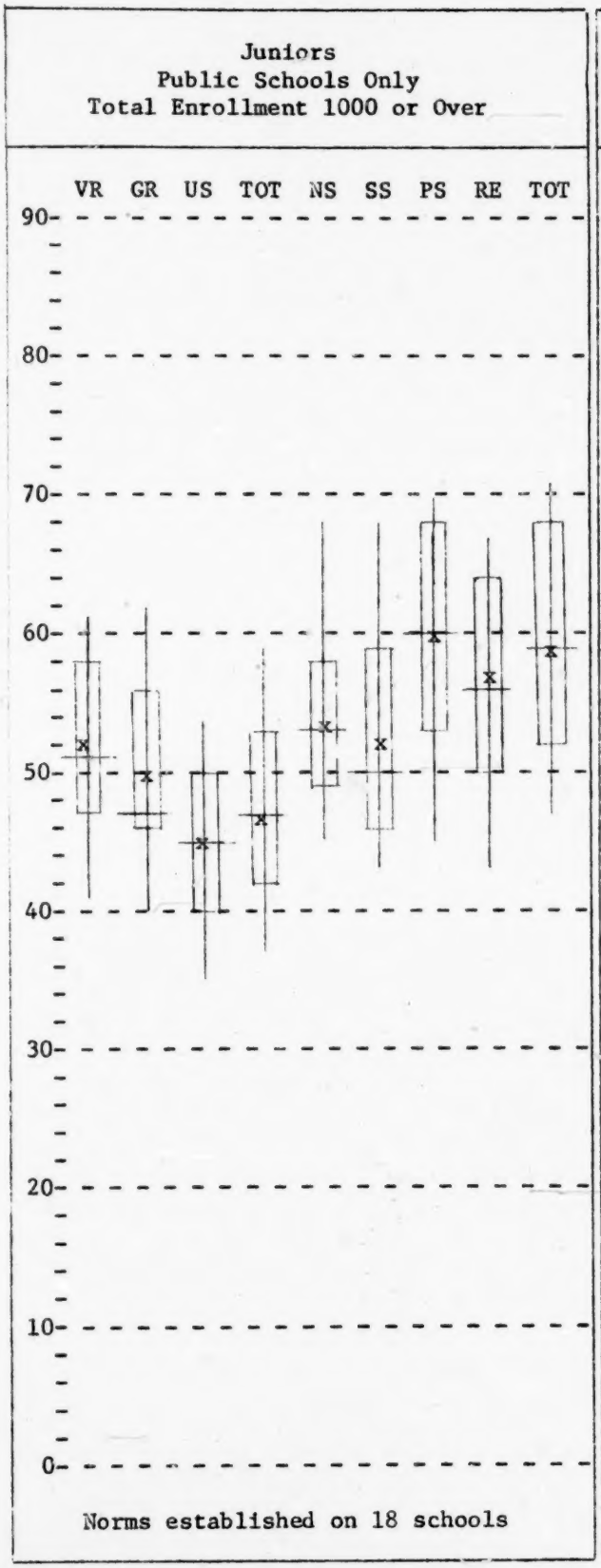
GRAPH 6



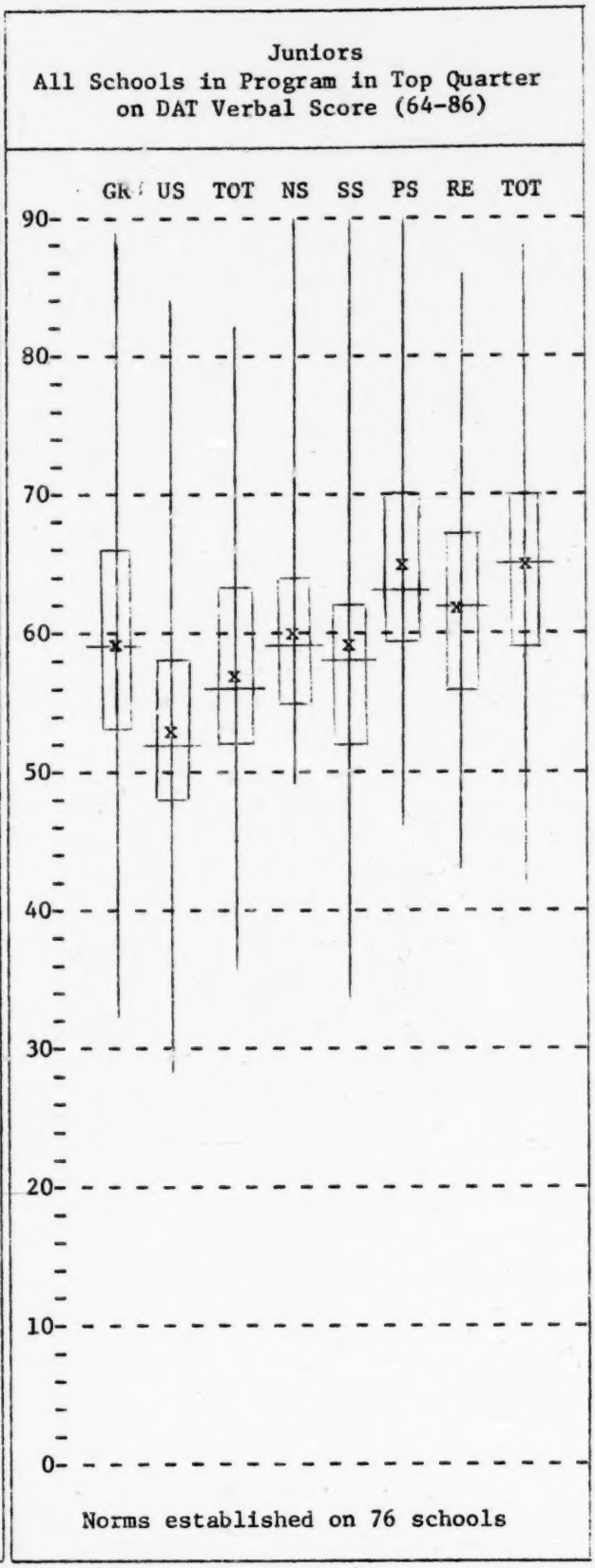

GRAPH 7



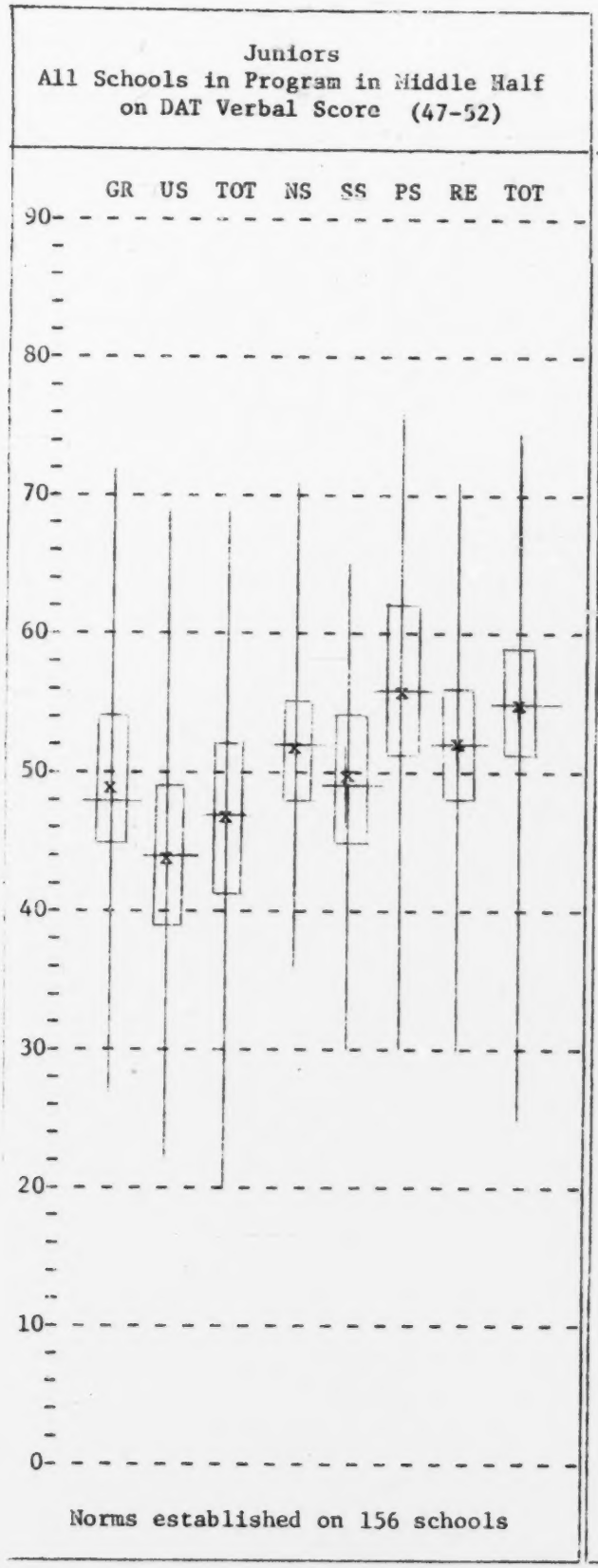
GRAPH 6



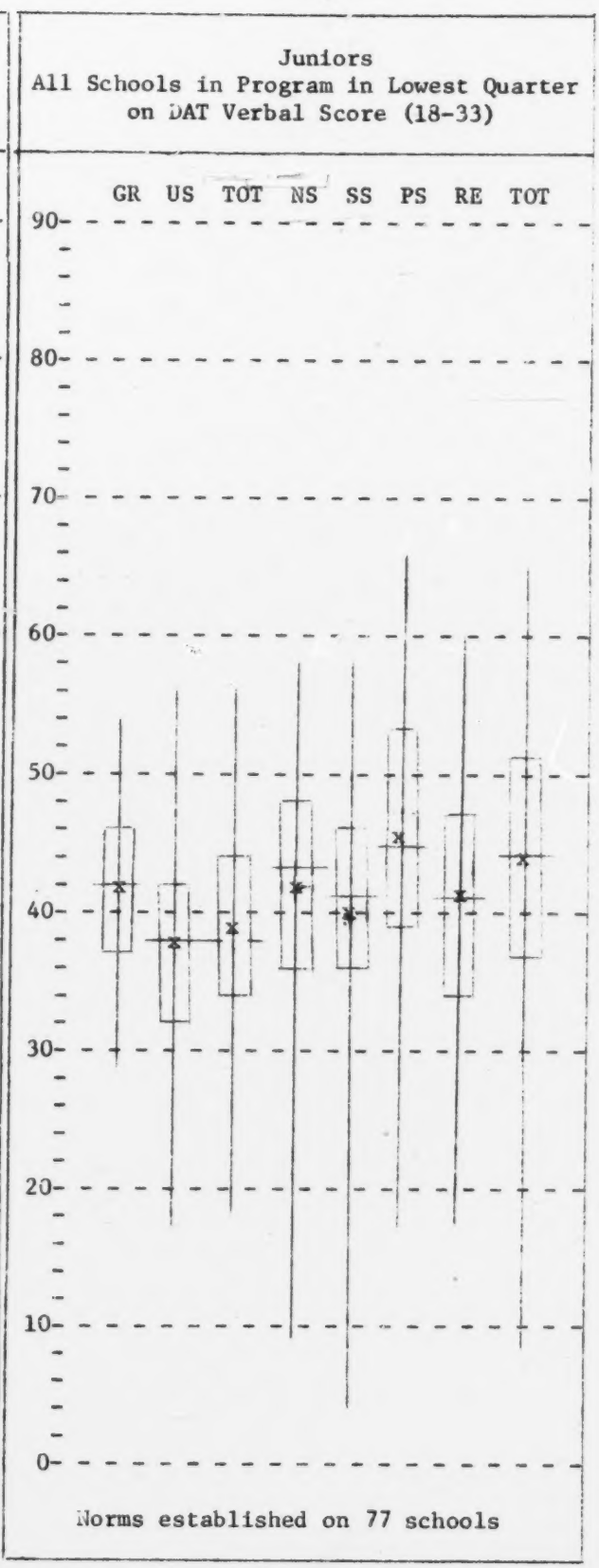

GRAPH 9



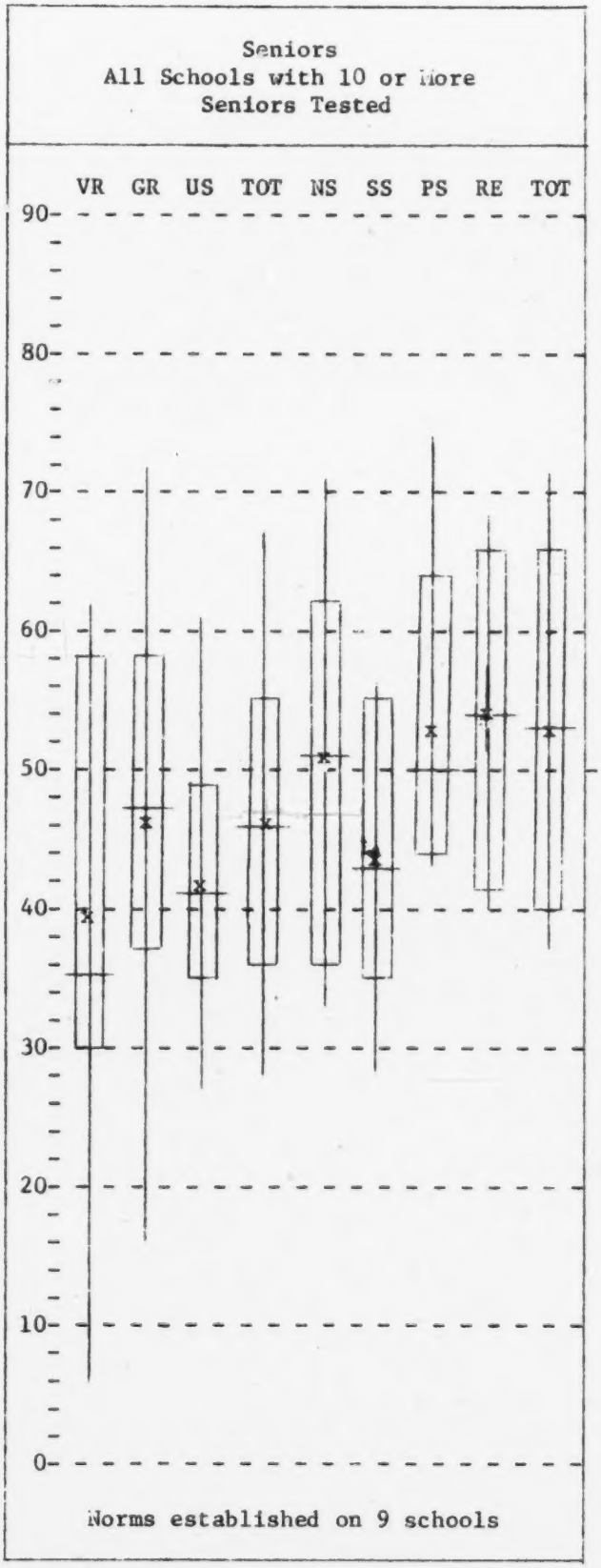
GRAPH 10




GRAPH 11



GRAPH 12


Seniors
All Schools with 10 or More
Seniors Tested
VR GR US TOT NS SS PS RE TOT
90
80
70
60
50
40
30
20
10
0
Norms established on 9 schools

The following sets of figures represent exactly the same things the foregoing graphs show. We simply have tabled here the following values for each norm graph line

1. The high point on the graph line--this is the top average made by any school in that norm classification.

2. The third quartile point--this is the percentile value which is indicated by the top line of the vertical box in the graph.

3. The median point--this is the value represented by the horizontal line within the vertical box.

4. The first quartile point--this represents the percentile value for the bottom line of the vertical box.

5. The low point--this represents the lowest average made by any school, or the point which is the lower extremity of the graph line.

6. The mean point--this is the percentile equivalent of the mean raw score and is indicated by the "x" in the vertical box.

These tables are numbered exactly as the graphs are numbered.

Table 1

| | VR | GR | US | TOT | NS | SS | PS | RE | TOT |
|---|---|---|---|---|---|---|---|---|---|
| High | 86 | 89 | 84 | 82 | 90 | 90 | 90 | 86 | 88 |
| $Q_3$ | 56 | 56 | 51 | 54 | 57 | 55 | 62 | 59 | 61 |
| Median | 50 | 48 | 45 | 47 | 52 | 49 | 56 | 52 | 55 |
| $Q_1$ | 42 | 43 | 38 | 40 | 47 | 44 | 48 | 46 | 48 |
| Low | 18 | 27 | 17 | 18 | 9 | 4 | 17 | 17 | 8 |
| Mean | 49 | 50 | 45 | 47 | 52 | 50 | 55 | 52 | 54 |

Table 2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 78 | 89 | 73 | 78 | 81 | 88 | 88 | 86 | 88 |
| $Q_3$ | 67 | 70 | 64 | 66 | 61 | 69 | 64 | 67 | 68 |
| Median | 58 | 58 | 52 | 54 | 53 | 61 | 60 | 60 | 60 |
| $Q_1$ | 44 | 44 | 45 | 44 | 44 | 49 | 52 | 49 | 53 |
| Low | 18 | 32 | 17 | 18 | 9 | 4 | 17 | 24 | 8 |
| Mean | 54 | 58 | 52 | 54 | 51 | 58 | 58 | 58 | 59 |

Table 3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 86 | 84 | 84 | 82 | 90 | 90 | 90 | 82 | 87 |
| $Q_3$ | 56 | 55 | 50 | 53 | 57 | 54 | 62 | 58 | 61 |
| Median | 49 | 48 | 44 | 46 | 52 | 48 | 56 | 52 | 55 |
| $Q_1$ | 42 | 43 | 38 | 40 | 47 | 43 | 48 | 46 | 48 |
| Low | 21 | 27 | 22 | 20 | 26 | 22 | 20 | 17 | 23 |
| Mean | 49 | 49 | 44 | 47 | 52 | 49 | 55 | 51 | 54 |

Table 4

| | VR | GR | US | TOT | NS | SS | PS | RE | TOT |
|---|---|---|---|---|---|---|---|---|---|
| High | 86 | 77 | 84 | 82 | 90 | 90 | 90 | 82 | 87 |
| $Q_3$ | 59 | 66 | 49 | 56 | 56 | 58 | 67 | 59 | 72 |
| Median | 46 | 44 | 41 | 46 | 52 | 45 | 55 | 52 | 51 |
| $Q_1$ | 38 | 40 | 32 | 35 | 40 | 40 | 45 | 36 | 47 |
| Low | 33 | 32 | 28 | 30 | 26 | 25 | 33 | 17 | 26 |
| Mean | 50 | 49 | 43 | 48 | 51 | 48 | 57 | 50 | 56 |

Table 5

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 68 | 84 | 69 | 74 | 74 | 68 | 79 | 74 | 76 |
| $Q_3$ | 56 | 55 | 51 | 54 | 57 | 54 | 62 | 58 | 61 |
| Median | 48 | 48 | 44 | 46 | 52 | 48 | 56 | 50 | 54 |
| $Q_1$ | 42 | 42 | 38 | 39 | 46 | 42 | 47 | 42 | 46 |
| Low | 22 | 27 | 22 | 20 | 30 | 22 | 20 | 28 | 23 |
| Mean | 49 | 49 | 44 | 46 | 51 | 48 | 54 | 50 | 53 |

Table 6

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 63 | 62 | 55 | 59 | 68 | 62 | 76 | 69 | 76 |
| $Q_3$ | 53 | 57 | 50 | 54 | 60 | 56 | 62 | 56 | 60 |
| Median | 50 | 49 | 46 | 48 | 52 | 50 | 58 | 52 | 56 |
| $Q_1$ | 45 | 43 | 41 | 42 | 48 | 46 | 50 | 49 | 49 |
| Low | 31 | 34 | 32 | 32 | 38 | 34 | 33 | 32 | 34 |
| Mean | 49 | 50 | 46 | 48 | 53 | 50 | 56 | 52 | 55 |

Table 7

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 62 | 61 | 55 | 58 | 59 | 57 | 66 | 62 | 61 |
| $Q_3$ | 52 | 52 | 47 | 50 | 55 | 53 | 60 | 57 | 59 |
| Median | 49 | 47 | 44 | 46 | 50 | 48 | 55 | 53 | 55 |
| $Q_1$ | 44 | 44 | 38 | 40 | 46 | 45 | 52 | 49 | 52 |
| Low | 21 | 32 | 24 | 26 | 29 | 31 | 31 | 22 | 24 |
| Mean | 47 | 47 | 43 | 45 | 49 | 47 | 55 | 51 | 54 |

Table 8

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 61 | 62 | 54 | 59 | 68 | 68 | 70 | 67 | 71 |
| $Q_3$ | 58 | 56 | 50 | 53 | 58 | 59 | 68 | 64 | 68 |
| Median | 51 | 47 | 45 | 47 | 53 | 50 | 60 | 56 | 59 |
| $Q_1$ | 47 | 46 | 40 | 42 | 49 | 46 | 53 | 50 | 52 |
| Low | 41 | 40 | 35 | 37 | 45 | 43 | 45 | 43 | 47 |
| Mean | 52 | 50 | 45 | 47 | 54 | 52 | 60 | 57 | 59 |

Table 9

| | VR | GR | US | TOT | NS | SS | PS | RE | TOT |
|---|---|---|---|---|---|---|---|---|---|
| High | | 89 | 84 | 82 | 90 | 90 | 90 | 86 | 88 |
| $Q_3$ | | 66 | 58 | 63 | 64 | 62 | 70 | 67 | 70 |
| Median | | 59 | 52 | 56 | 59 | 58 | 63 | 62 | 65 |
| $Q_1$ | | 53 | 48 | 52 | 55 | 52 | 59 | 56 | 59 |
| Low | | 32 | 28 | 36 | 49 | 34 | 46 | 43 | 42 |
| Mean | | 59 | 53 | 57 | 60 | 59 | 65 | 62 | 65 |

Table 10

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| High | 72 | 69 | 69 | 71 | 65 | 76 | 71 | 74 |
| $Q_3$ | 54 | 49 | 52 | 55 | 54 | 62 | 56 | 59 |
| Median | 48 | 44 | 47 | 52 | 49 | 56 | 52 | 55 |
| $Q_1$ | 45 | 39 | 41 | 48 | 45 | 51 | 48 | 51 |
| Low | 27 | 22 | 20 | 36 | 30 | 30 | 30 | 25 |
| Mean | 49 | 44 | 47 | 52 | 50 | 56 | 52 | 55 |

Table 11

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| High | 54 | 56 | 56 | 58 | 58 | 66 | 60 | 65 |
| $Q_3$ | 46 | 42 | 44 | 48 | 46 | 53 | 47 | 51 |
| Median | 42 | 38 | 38 | 43 | 41 | 45 | 41 | 44 |
| $Q_1$ | 37 | 32 | 34 | 36 | 36 | 39 | 34 | 37 |
| Low | 29 | 17 | 18 | 9 | 4 | 17 | 17 | 8 |
| Mean | 42 | 38 | 39 | 42 | 40 | 46 | 41 | 44 |

Table 12

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High | 62 | 72 | 61 | 67 | 71 | 56 | 74 | 68 | 72 |
| $Q_3$ | 58 | 58 | 49 | 55 | 62 | 55 | 64 | 66 | 66 |
| Median | 35 | 47 | 41 | 46 | 51 | 43 | 50 | 54 | 53 |
| $Q_1$ | 30 | 37 | 35 | 36 | 36 | 35 | 44 | 41 | 40 |
| Low | 6 | 16 | 27 | 28 | 33 | 28 | 43 | 40 | 37 |
| Mean | 39 | 46 | 42 | 46 | 51 | 44 | 53 | 54 | 53 |